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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,179	04/19/2004	Masaya Mitani	WAKAB76.005AUS	2425

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EXAMINER	
ONEILL, KARIE AMBER	
ART UNIT	**PAPER NUMBER**
1745	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	12/21/2006	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 12/21/2006.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
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Office Action Summary	Application No.	Applicant(s)	
	10/827,179	MITANI ET AL.	
	Examiner	Art Unit	
	Karie O'Neill	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) *8-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4-19-04, 6-15-06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's election without traverse of Species I (Claims 1-7) in the reply filed on October 18, 2006, is acknowledged. Therefore, Claims 8-16 are withdrawn from consideration.

Claim Objections

2. Claim 4 is objected to because of the following informalities: In line 2, it is thought by the Examiner that the term "polyglycelol" should be "polyglycerol". Appropriate correction is required.

Specification

3. The disclosure is objected to because of the following informalities: Page 9, line 9 uses the term "polyglycelol" and it is believed by the Examiner that this term should be "polyglycerol", as indicated on page 6, line 5.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamisuki et al. (US 6,899,974 B2) in view of Johnson (US 3,776,779).

With regard to Claim 1, Kamisuki et al. disclose in Figure 3, a secondary battery comprising a cathode (2) containing a proton-conducting compound as an electrode active material, an anode (4) containing a proton-conducting compound as an electrode active material. Each electrode is made of a binder matrix wherein polymers are used as electrode active materials and are, for example, π-conjugated macromolecules such as polyanaline, polythiophene, polypyrrole, polyacetylene, poly-p-phenylene, polyphylene vinylene, polyperinaphthalene, polyfuran, polythienylene, polypyridinediyl, among others (column 4 lines 25-40). Kamisuki et al. also discloses an aqueous electrolytic solution containing a proton source as an electrolyte, for example, an aqueous solution of protonic acid such as sulfuric acid, hydrochloric acid and phosphoric acid (column 5 lines 16-19).

Kamisuki et al. do not disclose wherein the electrolytic solution comprises a polymeric compound having an atom with an unpaired electron in its principal chain as an electron-transfer promoter.

Johnson discloses a gelled electrolyte solution containing a polyglycol polymer, preferably polyethylene glycol (column 3 line14-15), which has an oxygen atom with an unpaired electron as part of its chemical structure. Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a polymeric compound having an atom with an unpaired electron in its principal chain with the electrolytic solution of Kamisuki et al., because Johnson teaches using an additive to

stabilize the gel created and in an effort to improve the battery performance or life (column 4 lines 20-24).

With regard to Claims 2-4, Johnson discloses the electron-transfer promoter being a polymeric compound, preferably polyethylene glycol (column 3 lines 14-15), which in the principal chain, has an oxygen as an atom with an unpaired electron, and is a polymeric compound having an alkylene oxide moiety in a repeating unit. Polyethylene glycol and polyethylene oxide are polymers having an identical structure: $HO-(CH_2-CH_2-O)_n-H$. Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a polymeric compound, such as polyethylene glycol, having an atom with an unpaired electron in its principal chain with the electrolytic solution of Kamisuki et al., because Johnson teaches using an additive of such a nature that it will not significantly shrink, crack or otherwise breakdown during continued, repeated use (column 3 lines 18-20).

With regard to Claims 5-6, Johnson discloses the polymeric compound, polyethylene glycol, having an average molecular weight from about 200 to about 6,000 (column 6 lines 20-21) and wherein the content of the polyethylene glycol is 0.065 to about 0.0001% by weight in the electrolytic solution (column 6 lines 3-6). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a polymeric compound, such as polyethylene glycol, having a specific average molecular weight and weight % with the electrolytic solution of Kamisuki et al., because Johnson teaches if quantities of the polyglycol fall below determined molecular weights and weight percents, the electrolyte will have undesired thixotropic characteristics and

will not be adequately stabilized so that it will not undesirably tend to crack or shrink and breakdown in response to physical forces, and if quantities are in excess, there will be an uneconomic use of material which may result in an undesired increase in battery internal resistance (column 5 lines 56-67).

With regard to Claim 7, Johnson discloses a battery using an electrolytic solution containing a proton source of sulfuric acid and a polymer of polyethylene glycol, which work in conjunction with the active materials of the electrodes associated with battery performance and charge/discharge of cycle life (column 4 lines 20-29). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use the proton source and polymer in conjunction with the active material of the electrodes of Kamisuki et al., because Johnson teaches batteries with these specific ingredients being utilized for prolonged periods of time without cracking or shrinking (column 8 lines 61-66).

6. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiyama et al. (US 6,300,015 B1) in view of Johnson (US 3,776,779).

With regard to Claim 1, Nishiyama et al. disclose in Figure 8, a proton conductive polymer battery comprising a cathode (2) containing a proton-conducting compound as an electrode active material, an anode (4) containing a proton-conducting compound as an electrode active material. A polymer is used for the positive and negative electrode active materials and are selected from the group consisting of π-conjugated polymers such as polyanaline and derivatives thereof, polyindole and derivatives thereof (column

4 lines57-67), and the positive electrode active material also selected from a quinoid structure, polyanaline, polyindole, nitropolyanaline, polydiaminoanthraquinone, polypyrrole, polypyridine, polypyrimidine and derivatives thereof, anthraquinone derivatives and benzoquinone and derivatives (column 5 lines 2-18). Nishiyama et al. also disclose the gel electrolyte solution containing a proton source, such as sulfuric acid (column 5 lines 51-54), as an electrolyte.

Nishiyama et al. do not disclose wherein the electrolytic solution comprises a polymeric compound having an atom with an unpaired electron in its principal chain as an electron-transfer promoter.

Johnson discloses a gelled electrolyte solution containing a polyglycol polymer, preferably polyethylene glycol (column 3 line14-15), which has an oxygen atom with an unpaired electron as part of its chemical structure. Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a polymeric compound having an atom with an unpaired electron in its principal chain with the electrolytic solution of Nishiyama et al., because Johnson teaches using an additive to stabilize the gel created and in an effort to improve the battery performance or life (column 4 lines 20-24).

With regard to Claims 2-4, Johnson discloses the electron-transfer promoter being a polymeric compound, preferably polyethylene glycol (column 3 lines 14-15), which in the principal chain, has an oxygen as an atom with an unpaired electron, and is a polymeric compound having an alkylene oxide moiety in a repeating unit. Polyethylene glycol and polyethylene oxide are polymers having an identical structure:

$HO-(CH_2-CH_2-O)_n-H$. Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a polymeric compound, such as polyethylene glycol, having an atom with an unpaired electron in its principal chain with the electrolytic solution of Nishiyama et al., because Johnson teaches using an additive of such a nature that it will not significantly shrink, crack or otherwise breakdown during continued, repeated use (column 3 lines 18-20).

With regard to Claims 5-6, Johnson discloses the polymeric compound, polyethylene glycol, having an average molecular weight from about 200 to about 6,000 (column 6 lines 20-21) and wherein the content of the polyethylene glycol is 0.065 to about 0.0001% by weight in the electrolytic solution (column 6 lines 3-6). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use a polymeric compound, such as polyethylene glycol, having a specific average molecular weight and weight % with the electrolytic solution of Nishiyama et al., because Johnson teaches if quantities of the polyglycol fall below determined molecular weights and weight percents, the electrolyte will have undesired thixotropic characteristics and will not be adequately stabilized so that it will not undesirably tend to crack or shrink and breakdown in response to physical forces, and if quantities are in excess, there will be an uneconomic use of material which may result in an undesired increase in battery internal resistance (column 5 lines 56-67).

With regard to Claim 7, Johnson discloses a battery using an electrolytic solution containing a proton source of sulfuric acid and a polymer of polyethylene glycol, which work in conjunction with the active materials of the electrodes associated with battery

performance and charge/discharge of cycle life (column 4 lines 20-29). Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to use the proton source and polymer in conjunction with the active material of the electrodes of Nishiyama et al., because Johnson teaches batteries with these specific ingredients being utilized for prolonged periods of time without cracking or shrinking (column 8 lines 61-66).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karie O'Neill whose telephone number is (571) 272-8614. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Karie O'Neill
Examiner
Art Unit 1745

KAO

DAH-WEI YUAN
PRIMARY EXAMINER